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THE NORTH AMERICAN CALLIMORPHAS.

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The North American species of the genus *Callimorpha* are exceedingly interesting both from their beauty and from the extreme variations to which some of the species are subject, and which has given rise not only to the creation of numerous synonyms, but also to distinct species being regarded as merely varieties of other forms.

A very slight study of the literature of this subject is sufficient to show that these forms have been very badly treated by the "authorities," whether "lumpers" or "splitters," who have in this instance been but blind leaders of the blind; and some of those who during the last two years have endeavored to clear up matters a little, have not succeeded in making confusion less confounded. This confusion is also largely owing to the inaccessibility of the figure of Boisduval's species, and to the description by subsequent writers of new forms without any illustrations, which is particularly objectionable in the case of a group subject to great variation.

My attention was first seriously directed to this genus about six or seven years ago, by a paper read before the Montreal Branch of the Entomological Society of Ontario, by Mr. F. B. Caulfield, who advanced the opinion that several distinct species were confused under the all-embracing name of *Lecontei*.

At that time the only white and black form which I had seen was the true *Lecontei*, of which I had an excellent series showing most extraordinary variations, and I was disposed to listen very incredulously to Mr. Caulfield's theories; but an examination of his specimens convinced me that he had some grounds for his views, and I therefore turned my attention to the group, and have studied it as I have had time and opportunity since.

Besides my own and the other Montreal collections, which now contain a very good series of these moths, I have had the opportunity of examining the collections of the Museum of Comparative Zoology at Cambridge, Mass., the collection of the Boston Society of Natural History, the Harris collection, the collections of Messrs. Henry Edwards, B. Neumoegen and Herman Strecker, and last year the British Museum collection. I am also indebted to Mr. A. G. Butler, of the British Museum, for colored drawings of Walker's type specimens which he sent me in 1882, and to Mr. B. P. Mann and Mr. Scudder, for a copy of the original description of Boisduval's *Lecontei*. I have therefore not approached this difficult subject lightly, and it is only because I feel confident that I can clear up some of the errors which have so long prevailed that I now venture to publish the results of my studies. In any attempt to unravel the tangle into which these forms have been thrown by the leaders of entomological science, the first thing to be done is to find out what *Callimorpha Lecontei* of Boisduval really is, instead of jumping to the conclusion that any white and black specimen, or even a pure white one for that matter, is that form. The description of *Lecontei* given in Guérin's "Iconographie du Règne Animal de G. Cuvier," may be translated as below :

Species with White Secondaries.

CALLIMORPHA LECONTEI, Boisduval. Guérin, Iconographie, etc., p. 518, plate 88, fig. 4.

(Figures 1 and 2.)

"Body white, with the top of the head of a pale yellow and a black or brown line extending from the prothorax to the extremity of the abdomen.

"Primaries black or brown, according to the more or less fresh condition of the insect, each having five large rounded and irregular white spots, touching each other sometimes as in the specimen figured, in which the two spots in the middle are united, while in another it is the two spots at the apex which are confluent.

"Secondaries immaculate.

"The under side resembles the upper, but having the black parts very pale. Legs lightly tinted with yellow.

"Expands 52 milli. Hab.—North America.

This description, taken in connection with the figure of which I previously had a drawing, but which I had the pleasure of seeing for myself

last year through the kindness of Mr. W. F. Kirby, enables me to definitely determine the true *Lecontei*, of which I have a full series, and typical forms of which are shown in figures 1 and 2 of the accompanying plate.

This species varies in almost every conceivable manner by the spots becoming confluent in different ways, and it even mimics the forms with yellow hind wings in occasionally having the white suffused with a tinge of ochre yellow. But there is one way in which it never varies, and that is that there is always a prominent process on the brown border of the inner margin of primaries, nearly one-third from the inner angle from which a band usually extends towards the apex. In expanse my specimens vary from 44-52 m.m., the average being about 48 m.m.

C. Leucomelas H. Sch. is only a synonym of *Lecontei*, being the form represented in fig. 2, in which the two spots towards the apex are united. Fig. 3 is only a further variety of *Lecontei* showing the gradual transition to fig. 4, which is a true specimen of the typical *Militaris* of Harris, as figured and described in his *Insects Injurious to Vegetation*. Fig. 5 represents a very interesting specimen which, though undoubtedly a variety of *Lecontei*, mimics *Interrupto-marginata* (what a pity it is that we cannot use Harris's manuscript name *Anchora*!) very closely in markings.

The form which Walker and many other entomologists have mistaken for *Lecontei* is that figured Nos. 7-9, of which I shall have more to say later on.

The other forms described by Walker were *Confinis*, *Contigua* and *Conseita*.

CALLIMORPHA LECONTEI, var. CONFINIS, Walk.

Hypercompa Confinis, Walk., Cat. Lep. B. M., III., p. 651.

(Figure 6.)

"Alba; caput, prothorax, abdomen, basi et coxæ anticæ ex parte lutea; thorax et abdomen fusco vittata; alæ anticæ marginibus plerumque fasciæque obliqua fuscis.

"White. Head, prothorax, fore coxæ and abdomen at base luteous. Proboscis tawny. Palpi with black tips. Antennæ black. Thorax and abdomen with a brown stripe. Fore wings brown with a discal slightly angular white stripe, and an elongate triangular oblique sub-apical white band. Length of the body 6 lines; of the wings 18 lines. *a-d*, United States, from Mr. Dyson's collection."

This form varies somewhat, but a fairly typical specimen is shown in fig. 6. It may possibly be a distinct species, but I believe it to be merely a variety of *Lecontei* of the *Militaris* type, in which the tooth-like projections extending backwards from the costa have disappeared.

CALLIMORPHA CONTIGUA, Walk.

Hypercompa Contigua, Walk., Cat. Lep. B. M., III., page 651.

Callimorpha Reversa, Stretch (in part), Ent. Amer., I, p. 104.

(Figure 10.)

"Alba; caput et prothorax lutea; palpi nigri, basi lutei; antennæ nigrae; thorax et abdomen fusco univittata; alæ anticae marginibus plerumque fascia postmedia vittaque subapicali fuscis; posticae macula submarginali fusca.

"White. Head, prothorax and fore coxæ luteous. Proboscis tawny. Palpi black, luteous at the base. Antennæ black. Thorax and abdomen with a brown stripe. Fore wings brown, with a white discal stripe, which widens from the base to a little beyond the middle, and with two large sub-apical white spots. Hind wings with a small brown spot near the hind border. Length of the body 6 lines; of the wings 18 lines.

"a. United States."

This description, if possessing the merit of briefness, has certainly very little else to commend it, and so Mr. Saunders in his synopsis described the markings of the wings as follows:

"Primaries white with blackish-brown stripes; one along the costa to near the tip; one on the inner margin, joined at its extremity with an oblique transverse band, extending to the costa; from the centre of this latter a stripe extends to the hind margin, somewhat enlarged at its termination, where it is centred with white. Hind margin partially edged with brownish-black.

"Secondaries white, immaculate."

In order to make sure that the form so clearly described by Mr. Saunders was the one that Walker intended by his description, I sent a drawing of this form and of some others to Mr. Butler, who returned them to me with sundry notes upon them, and confirming this determination as correct. These drawings I sent to Mr. Stretch in 1885, upon the appearance of his description of *Reversa*, and asked him if his species was not the *Contigua* of Walker as illustrated by my drawing. To this letter I have never received any answer, nor have I been able to get my drawings

back, although I have written to him repeatedly to ask him to return them. My last letter, under date of Nov. 15th, 1886, I registered in order to make sure that it would reach him, and subsequently learned from the P. O. authorities that it had been duly delivered to the addressee. *Contigua* is a particularly well marked and constant form, and I think there can be no doubt that it is a good species. It varies slightly as all species will, but I have never seen an example which tended in any way to connect it with any other form.

I now come to the form which Doubleday and Walker mistook for *Lecontei*, and which has been almost universally confused with that species, but it differs so greatly from the true *Lecontei* that I feel convinced that it is a distinct species.

CALLIMORPHA CONFUSA, n. sp.

Hypercompa Lecontei, Walk. (not Boisd.), Cat. Lep. B. M., III., p. 651.

(Figures 7-9.)

Head and collar orange-yellow, the latter with two dark brown spots. Palpi orange-yellow tipped with black or dark brown. Antennae black. Thorax white, yellowish towards the abdomen, with a wide central brown stripe. Abdomen white, yellowish at base and tip, and with a dorsal dark brown stripe. Beneath, legs ochre-yellow; anterior coxae with a black spot; fore and median femora, tibiae and tarsi, dark brown exteriorly.

Primaries dark brown, with from five to six rather large irregularly shaped white spots, and two or three small ones. Of the large spots the one at the base is oblong, the second is generally bifid, but occasionally entirely divided, forming two distinct spots. The third is usually nearly round, the apical spot oval or oblong, occasionally united with the third; the fifth spot near the outer margin is large, subtriangular and sometimes broken into several spots.

Secondaries white, immaculate; but occasionally with a partial brown border running from a little below the apex to the middle of the outer margin, and with one or two brown dots near the anal angle. Beneath, primaries have the brown markings much more strongly reproduced than in *Lecontei*, and far more suffused with yellow than in that species.

Expands 37-42 m. m. = $1\frac{1}{8}$ - $1\frac{5}{8}$ inch.

Larva found feeding on *Cynoglossum officinale*, L. (Common Hound's Tongue), one or two on a plant, June 12th, 1881.

Length $1\frac{1}{8}$ inch, nearly cylindrical. Head small, black and shining, with a few short blackish hairs. Body above black, with a yellow mottled with orange dorsal stripe, and two similar but very much broken ones along each side. Between the dorsal and subdorsal stripes there is a very broken line of a bluish white colour. Each segment has from ten to twelve small black warts from each of which radiate a few black and grey bristles. Beneath bluish slate grey.

On June 19th, it was observed that these larvæ had changed their appearance as follows: The dorsal stripe is deep yellow and is composed of two oblong spots placed longitudinally on the middle of each segment, and several lighter yellow ones placed transversely on the folds between the segments. The upper lateral stripe is narrower and more broken, being composed of marks of irregular shapes and sizes. The lower stripe is broken up into a few scattered streaks, and the broken line of bluish white spots has disappeared.

Beneath, pale drab with a tinge of yellow and a few minute black dots. Prolegs same colour as the under surface, but with a shining black patch on the outside of each. Feet dark brown with light markings.

Entered pupa stage June 19th, 20th; emerged July 12th to 14th; duration of pupa stage, 23 to 24 days.

One female laid a large batch of eggs July 14th; examined under the microscope were found to be smooth, round, flattened at base, honey yellow; diameter .028 of an inch.

Eggs hatched July 25th; duration of egg stage 11 days.

Young larvae, length .10 of an inch. Head brown, shining, with a few hairs; body transparent yellow, warts placed as in mature larva, brown, shining, with a few light coloured hairs; feet brown. I left home early in August and took these larvae with me, but was obliged to change their food to Dandelion. On August 13th the following description was taken:

Length $\frac{5}{16}$ of an inch. Head black; mouth parts light coloured. Body dull white, marked with dark brown and bright yellow. The dorsal region is white, and there is a double, broken and irregular subdorsal stripe of dark brown. On each side there is a broken but distinct bright yellow band, and below the spiracles there is an irregular brown band, lighter than the subdorsal one. Warts small, black, shiny, with a few short hairs, principally black, but a few light coloured. Beneath dirty white; feet brown; prolegs dirty white, with a brown patch on outside.

When these larvæ are shaken off a leaf they let themselves down by a silk thread. Subsequently I lost all these larvæ by death. This species varies almost as much as *Lecontei*, but not so as to approach any other form as far at least as I have seen, and I have examined over thirty specimens. It is much smaller than *Lecontei*, and the underside is strikingly different.

It never varies in the direction of *Militaris*, and in some specimens the white spots are very much reduced in size, as shown in fig. 9. As Mr. Caulfield has pointed out,* *Lecontei* varies in the direction of albinism *Confusa* in the direction of melanism.

In the Cambridge Museum there are four specimens of this species, with a blank label attached by Prof. Agassiz. Three of these are from Trenton, N. Y., which is the locality that the British Museum specimens came from, and one is from Kanawha, West Virginia.

CALLIMORPHA SUFFUSA, J. B. Smith.

Callimorpha Reversa, Stretch (in part), Ent. Amer. I., p. 104.

Callimorpha Suffusa, J. B. Smith, Ent. Amer. III., p. 25.

(Figure 11.)

This form has been so clearly described by Mr. Smith that it is not necessary for me to add anything in the way of description to what he has already published. I had myself intended to describe it as new, giving it the name of one of the sisters of Clymene, on account of its remarkably close resemblance, in everything but colour, to the species named after that nymph, and I cannot help thinking that the name chosen by Mr. Smith is by no means appropriate.

This form is very distinct and varies very little, if I may judge from a large series in the Cambridge Museum which were taken by Mr. Boll at Dallas, Texas. Its distinctness from *Contigua* is evident, from the fact that the markings are not only wholly dissimilar, but the transverse brown line from inner angle reaches the costa about two-fifths from the base, whereas in the latter the point of contact is about two-fifths from the apex.

Notwithstanding the total dissimilarity of these forms, Mr. Stretch has evidently regarded them as one species, but there is one point in which his diagnosis is unintelligible to me; he says, "in *Lecontei* the main transverse band starts from inner angle and goes to the apex,

* 16th Report of Ent. Soc. Ont., page 38.

while in *Reversa* it starts from *outer margin* and goes to the anal angle." The italics are mine, and I would suggest that he probably means the costa or anterior margin.

Mr. Smith is also in error in charging Mr. Caulfield with mistaking this form for *Lecontei*, as the three forms to which that gentleman referred* were *Lecontei*, *Contigua* and *Confusa*.

Mr. Smith is also quite astray in saying that *Lecontei* is distinct from *Militaris*, and I therefore judge that he has himself mistaken *Confusa* for *Lecontei*.

CALLIMORPHA FULVICOSTA, Clemens.

Hypercompa Fulvicosta, Clem., Proc. Acad. Nat. Sc. Phil., p. 536.

Callimorpha Vestalis, Pack., Proc. Ent. Soc. Phil. III., p. 108.

(Figure 12.)

Head and collar deep yellow, palpi yellow tipped with dark brown, antennæ dark brown. Thorax white, tipped with yellow behind. Beneath, legs yellow, fore and median tibiae and tarsi brown exteriorly. Abdomen creamy white, yellowish at base and tip.

Primaries white; costa, especially below, edged with ochre yellow or occasionally brownish.

Secondaries white, immaculate.

Expands, 48-50 m.m. = $1\frac{7}{8}$ -2 in.

This form is, I believe, a distinct species, as I have never seen any specimens which varied from the type further than in the presence or absence of a slight brown edging to costa of primaries.

It occurs abundantly along with *Suffusa* at Dallas, Texas, where a large number were taken by Mr. Boll. The one figured on the plate was one of these, and I am indebted to Dr. Hagen for it.

Species with Yellow Secondaries.

These species are fewer and more easily separated than those in the former section, and if it had not been that one of the forms has been overlooked by most entomologists, it would not be necessary for me to treat of them at all.

CALLIMORPHA CLYMENE, Esper.

Hypercompa Clymene, Esper Schm. IV., 22, 10 pl. 182; Noct. 103, Fig. 1.

Callimorpha Carolina, Harris. Report, p. 243 (1841).

Head and collar orange yellow, the latter with two deep brown or

* 16th Rept. Ent. Soc., Ont., page 38.

black dots; palpi orange yellow tipped with black, antennæ black. Thorax white, yellowish behind, with a broad central brown band. Beneath, thorax yellow, legs yellow, fore coxæ with a black or brown dot, fore and median femora and tibiæ dark brown exteriorly, fore and median tarsi brown. Abdomen ochre-yellow with a dorsal row of brown dots which are sometimes almost obsolete. Primaries marked exactly as in *Suffusa*, (fig. 11). Secondaries ochre-yellow, immaculate, or with a brown dot near anal angle. Beneath, all the wings are deep ochre-yellow, the brown markings of primaries being reproduced more or less distinctly except towards apex and outer margin. Expands, 53-58 mm. = $2\frac{1}{8}$ - $2\frac{1}{4}$ inch.

This species is well known and distinct. It varies somewhat in the maculation of primaries, but not so far as ever to render its determination doubtful.

CALLIMORPHA INTERRUPTO-MARGINATA, De Beauv.

Bombix Interrupto-marginata, De Beauv., Ins. Afriq. et Amer.,
p. 265, pl. 24, figs. 5, 6.

Callimorpha Anchora, Harris, MS.

Hypercompe Comma, Walk. Cat. Lep. B. M. III., p. 652.

Head whitish, front and vertex ochre-yellow, palpi yellow tipped with black. Collar and thorax white with a broad median brown band. Beneath, legs as in *Clymene* except that the spot on fore coxæ is wanting. Abdomen ochre-yellow with a dorsal brown stripe.

Primaries creamy white, suffused with yellow at the apex, with a dark brown stripe along the costa to near the apex, a band of the same colour along the inner margin to inner angle, near which it branches, sending forward half way to the costa a broad, slightly curved band, which marks, when the wings are closed, have a slight resemblance to an anchor.

Outer margin with an incomplete brown border, widest at the middle.

Secondaries ochre-yellow with a brown spot near anal angle.

Beneath ochre-yellow with the brown markings partially reproduced.

Expands, 47-49 mm.

Hab., Canada to Florida.

This very distinct species seems to be the most constant of any and it is a shame that it should be burdened with such an abominable name. The markings are very close to fig. 5, except that there is no spur on the costal border, and that there is the brown spot on secondaries.

CALLIMORPHA CONSCITA, Walk.

Tanada Consquita, Walk. Cat. Lep. B. M. XXXII., p. 377.*Callimorpha Lactata*, J. B. Smith, Ent. Amer. III., p. 25.

"Mas. Alba; caput luteum; palpi oblique ascendentes, verticem non superantes, articulo 3^{to} longi-conico; antennæ nigræ, setosæ; thorax antice luteus; abdomen flavum; pedes flavi, fusco vari; alæ anticæ costa lutea; posticæ flavæ. Var. B. Abdomen flavo-album; alæ posticæ flavo-albæ, anticæ costa flavo-alba. Fœm.—Antennæ sub setulosæ; abdomen album; alæ albæ; anticæ costa lutea.

"Male. White; head and fore part of the thorax luteous. Proboscis tawny. Palpi luteous, pubescent, obliquely ascending, not rising so high as the vertex; third joint elongate-conical, not more than half the length of the second. Antennæ black, setose. Abdomen yellow, not extending beyond the hind wings; apical tuft very small. Legs yellow, smooth; spurs moderately long; anterior tibiæ and tarsi brown above. Wings elongate, fore wings slightly rounded at the tips; costa luteous. Hind wings yellow. Var. B.—Abdomen, except the apical tuft, yellowish white. Hind wings, yellowish white. Fore wings, with a yellowish white costa. Female.—Antennæ very minutely setulose. Abdomen and wings white, except the costa of the fore wings. Length of the body, 7 to 8 lines; of the wings, 20 lines."

It would seem that the female above mentioned must have been a specimen of *Fulvicosta*, but the male is a good species, although its describer treated it so badly as to put it into a wrong genus. Mr. Butler sent me, in 1882, a coloured drawing of Walker's type, and I immediately recognized that it bears the same relation to the species with yellow secondaries as *Fulvicosta* does to those with white ones.

I think that the fact that Walker mistook *Fulvicosta* for the female of this species should not destroy the validity of his name, and I have therefore cited Mr. J. B. Smith's name *Lactata* as a synonym.

The results of my studies would lead me to group these species as follows:

CALLIMORPHA, Latreille.

1. Clymene, Esper.

Carolina, Harris.

2. Interrupto-marginata, De Beauv.

Anchora, Harris, MS.*Comma*, Walk.

3. *Conscita*, Walk.
Lactata, J. B. Smith.
4. *Lecontei*, Boisd.
Militaris, Harris.
Leucomelas, H. Sch.
———var. *Confinis*, Walk.
5. *Contigua*, Walk.
Reversa, Stretch (in part.)
6. *Confusa*, Lyman.
Lecontei, Walk. (not Boisd.)
7. *Suffusa*, J. B. Smith.
Reversa, Stretch (in part.)
8. *Fulvicosta*, Clemens.
♀ *Conscita*, Walk.
Vestalis, Packard.

I am very anxious to obtain larger series of specimens, showing the extremes of variation of all the forms, from all over the continent, and will be glad to purchase or obtain them in exchange for other specimens. Collectors will also confer a favour if they will report to me which species occur in their localities.

EXPLANATION OF PLATE.

No. 1.	Callimorpha	Lecontei, Boisd.	Montreal
" 2.	"	"	"	"
" 3.	"	"	"	"
" 4.	"	"	var. <i>Militaris</i> , Harr.	"
" 5.	"	"	var.	"
" 6.	"	"	var. <i>Confinis</i> , Walk., Minnesota	"
" 7.	"	Confusa, Lyman	Montreal
" 8.	"	"	"	"
" 9.	"	"	"	"
" 10.	"	Contigua, Walk	"
" 11.	"	Suffusa, J. B. Smith	Kansas
" 12.	"	Fulvicosta, Clemens	Texas

STUDIES OF THE NORTH AMERICAN PROCTOTRUPIDÆ,
WITH DESCRIPTIONS OF NEW SPECIES FROM FLORIDA.

(PAPER No. 3.)

BY WM. H. ASHMEAD, JACKSONVILLE, FLORIDA.

Sub-family MYMARINÆ.

LXVII. *Camptotera* Foerster.LXVIII. *Ooctonus* Haliday.107 (1). *Ooctonus longipes*, n. sp.

Female. Length .03 inch. Head and thorax black. Antennæ 11-jointed, scape and pedicel dilated below, flagellum and club pale brown, funicle joints slender, cylindrical, club greatly and enormously enlarged, not jointed. Legs long, slender, yellow. Abdomen ovate, black, shining; petiole slender, yellowish. Wings hyaline, very narrow, with extremely long ciliæ; submarginal vein short; marginal vein punctiform.

Hab.—Florida. Described from one specimen.

LXIX. *Limacis* Foerster.108 (1). *Limacis aspidioticola* Ashm.*Aphelinus aspidioticola* Ashm. Orange Insects, 1880, p. 9, pl. ii, f.

1, 4, 7, 9, 13.

Hab.—Florida.

LXX. *Gonatocerus* Nees.109 (1). *Gonatocerus dolichocerus*, n. sp.

Female. Length, .07 inch. Head, thorax and the sessile abdomen above, black, the latter beneath, brownish-yellow. Antennæ 11-jointed, as long as the whole body, black; the club is greatly lengthened, thick and not jointed. Legs including coxæ, pale yellowish-brown, the fore tibiæ obfuscated along upper edges, posterior tibiæ and tips of femora, dusky. Wings hyaline, fore wings broadened and rounded at tips, surrounded with short ciliæ; sub-marginal vein, the only one apparent, black; hind wings linear.

Hab.—Florida. Described from one specimen.

110 (2). *Gonatocerus nigratarsis*, n. sp.

Female. Length .05 inch. At once distinguished from the other species by its smaller size, shorter antennæ, brown, not black, and the less

thickened antennal club; the legs are yellowish, the fore tibiae not obfuscated along upper edges, although the posterior pair are; all tarsi dusky; abdomen entirely black.

Hab.—Florida. Described from one specimen.

This species somewhat resembles a European species in my collection, *e.*, *Gonatocerus ater* Foerster, but the paler colored legs easily separate it.

LXXI. *Litus* Haliday.

111 (1). *Litus armatus*, n. sp.

Female. Length .02 inch. Bright yellow. Eyes and flagellum brown. Antennae 9-jointed, much longer than the whole body; scape and pedicel large, dilated below, first funicle joint short, not longer than wide, second as long as the thick club or terminal joint, other joints gradually shorter. Abdomen sessile with a dusky shade above at base; ovipositor exerted, stout, black, about two thirds as long as abdomen. Wings hyaline, narrow, with long ciliae.

Hab.—Florida.

LXXII. *Alaptus* Walker.

112 (1). *Alaptus pallipes*, n. sp.

Female. Length .02 inch. Black. Head very large, much broader than the rather slender thorax. Antennae 8-jointed, brown; scape short, dilated, pedicel small, first funicle joint shorter than second, second longer, third short but thicker than second, fourth much longer and thicker than third, fifth still longer but not so thick, club greatly swollen, as long as the scape. Abdomen sessile, ovate, not as long as thorax. Legs pale. Wings hyaline, with very long ciliae, the fore wings spatulate, the hind wings linear.

Hab.—Florida.

LXXIII. *Signiphora* Ashmead.

113 (1). *Signiphora flavopallata* Ashm. Orange Insects, 1880, p. 30, pl. ii.

Hab.—Florida.

LXXIV. *Eustochus* Haliday.

114 (1). *Eustochus xanthothorax*, n. sp.

Female. Length .03 inch. Head, prothorax and abdomen black; mesothorax and legs bright yellow; antennae pale brown; tarsi four jointed; antennae apparently (?) 9-jointed; tip of abdomen surrounding

anus, yellow. Wings extremely narrow, with long ciliæ; marginal vein elongated.

Hab.—Florida.

LXXV. *Doriclytus* Foerster.

LXXVI. *Mymar* Haliday.

LXXVII. *Pteratomus* Packard.

115 (1). *Pteratomus Putnamii* Packard. Guide to the Study of Insects, p. 202, pl. iii., f. 8, 8^o.

Hab.—Massachusetts.

This genus is probably identical with *Mymar* Haliday.

LXXVIII. *Cosmocoma* Foerster.

116 (1). *Cosmocoma elegans* Howard. U. S. Agric. Rep., 1880, p. 370. Hab.—District of Columbia.

There is a *Cosmocoma elegans* Foerster, in Europe, and this species may be changed to *C. Howardii*.

117 (2). *Cosmocoma maculipes*, n. sp.

Male. Length .03 inch. Black. Antennæ 13-jointed, longer than the whole body; scape and pedicel pale brown, flagellum black. Leg and petiole pale yellowish; femora and posterior tibiæ with a dusky blotch above. Wings hyaline.

Hab.—Florida.

This species is allied to *C. elegans* How., but the blotches on thighs and tibiæ will readily distinguish it.

LXXIX. *Ceraphractus* Walker.

LXXX. *Stictothrix* Foerster.

LXXXI. *Anaphes*, Haliday.

118 (1). *Anaphes gracilis* Howard. U. S. Agric. Rep., 1880, p. 370. Hab.—California.

119 (2). *Anaphes mellicornis*, n. sp.

Female. Length .03 inch. Shining black. Antennæ 9-jointed, honey-yellow, the club dusky. Legs honey-yellow, femora and posterior tibiæ somewhat testaceous. Wings hyaline.

Hab.—Florida.

Sub-family DIAPRIINÆ.

LXXXII. *Coptera* Say.

(? *Entomacis* Foerst.)

- 120 (1). *Coptera polita* Say. LeConte's Ed. Say's Works, ii., p. 728. Prov., Le Nat. Can., xvi., p. 181.
Hab.—Indiana, Canada.

LXXXIII. *Platymischus* Westwood.

- 121 (1). *Platymischus torquatus* Prov. Le Nat. Can., vol. xvi., p. 182. Hab. Canada.
122 (2). *Platymischus abdominalis* Say (Psilus). LeConte's Ed. Say's Works, ii., p. 729. Hab.—Indiana.

LXXXIV. *Galesus* Curtis.

- 123 (1). *Galesus ciliatus* Say (Psilus). LeConte's Ed. Say's Works, i., p. 383. Hab.—Indiana.
124 (2). *Galesus obtusus* Say (Psilus), l. c. i., p. 383. Hab.—Indiana.
125 (3). *Galesus colon* Say (Psilus), l. c. ii., p. 727. Hab.—Indiana.
126 (4). *Galesus quebecensis* Prov. Petite Faune Ent. du Canada, ii., p. 559. Hab.—Canada.
127 (5). *Galesus floridensis*, n. sp.
Male. Length .06 inch. Black, polished, with some sparse scattered pile, except on collar, where it is dense and white. Face prolonged; antennæ 14-jointed, piceous, much longer than body, joints with long white hairs; scape considerably swollen in the middle. Legs: coxæ, tips of femora, tibiæ and tarsi honey-yellow, femora black. Wings subhyaline. Hab.—Florida.

LXXXV. *Aneurhynchus* Westwood.

- 128 (1). *Aneurhynchus apicalis* Say, l. c. ii., p. 727. Hab.—Indiana.
129 (2). *Aneurhynchus spinosus* Prov., l. c. ii., p. 56. Hab.—Canada.
130 (3). *Aneurhynchus inermis* Prov. Add. Faune Hym., p. 176. Hab.—Canada.
131 (4). *Aneurhynchus aneurus* Prov., l. c., p. 176. Hab.—Canada.

LXXXVI. *Labotips* Haliday.LXXXVII. *Cephalonomia* Westwood.

- 132 (1). *Cephalonomia hirticollis*, n. sp.
Male. Length .08 inch. Black, highly polished. Antennæ 12-

jointed, dark red, scape paler at base, funicle joints very small, the four terminal joints greatly enlarged or swollen moniliform, the last joint is a little longer than broad. Prothorax densely covered with white pile. Legs dark red. Wings hyaline, veins yellowish.

Hab.—Florida.

133 (2). *Cephalonomia floridana*, n. sp.

Male. Length .05 inch. Entirely black, polished, excepting knees and tarsi, which are piceous. Antennæ 12-jointed, three terminal joints large moniliform, last joint being about as large as the two preceding ones together. Collar hairy; wings hyaline.

Hab.—Florida.

LXXXVIII. *Paramesius* Westwood.

134 (1). *Paramesius terminatus* Say (Psilus). LeConte's Ed. Say's Works, ii, p. 727. Hab.—Indiana.

LXXXIX. *Idiotypa* Foerster.

XC. *Hemilexis* Foerster.

135 (1). *Hemilexis mellipetiola*, n. sp.

Male. Length .05 inch. Slender, black. Antennæ 13-jointed, moniliform, gradually incrassated, red-brown; scape, legs and petiole of abdomen, honey-yellow, femora slightly obfuscated. Thorax without grooves. Metathorax covered with white pile. Wings hyaline, ciliate; no marginal vein. Hab.—Florida.

XCI. *Spilomicrus* Westwood.

136 (1). *Spilomicrus longicornis* Prov. Petite Faune Ent. du C., ii, p. 56. Hab.—Canada.

137 (2). *Spilomicrus foveatus* Prov. Add. à la Faune Hym., p. 176. Hab.—Canada.

XCII. *Diapria* Latreille.

138 (1). *Diapria brevicornis* Say (Psilus), l. c. i, p. 221.

Hab.—St. Peter's River.

139 (2). *Diapria erythrothorax*, n. sp.

Male. Length .05 inch. Stature of *Diapria tritoma* Thoms. Head and abdomen black; thorax red; antennæ and legs honey-yellow; wings hyaline. Hab.—Florida.

XCIII. *Loxotropa* Foerster.

140 (1). *Loxotropa mellea*, n. sp.

Male. Length .09 inch. Honey-yellow with long sparse, scattered

pubescence. Eyes and tip of abdomen brown. Antennæ 14-jointed, first funicle joint longer than pedicel or the second funicle joint, other joints moniliform, of nearly the same thickness. Mesothorax without grooves. Petiole of abdomen very thick dilated below. Wings hyaline, but with a yellowish cast, very pubescent.

Hab.—Florida.

XCIV. *Basalys* Westwood.

141 (1). *Basalys ruficornis* Prov. Petite Faune Ent. du Canada, ii., p. 560. Hab. Canada.

XCV. *Glyptonota* Foerster.

XCVI. *Monelata* Foerster.

143 (1). *Monelata mellicollis*, n. sp.

Female. Length .05 inch. Slender; head, thorax and abdomen polished black. Antennæ 13-jointed, honey-yellow; scape long, pedicel longer than first funicle joint, flagellar joints small, moniliform, terminal joint enormously enlarged or swollen, brown. Collar and legs honey-yellow. Mesopleuræ piceous. Mesoscutum without grooves. Wings hyaline, with long ciliæ.

XCVII. *Polypeza* Foerster.

Sub family BELYTINÆ.

XCVIII. *Ismarus* Haliday.

XCIX. *Psilomma* Foerster.

144 (1). *Psilomma americana*, n. sp.

Male. Length .12 inch. Slender, black. Antennæ and legs honey-yellow. Antennæ 13-jointed, filiform, very long, reaching beyond tips of wings when folded, apical half dusky; the pedicel is annular, third joint excised outwardly half its length. Thorax sparsely pubescent, with two distinct grooves. Wings hyaline, veins brown; there is a basal cell and a small, closed triangular marginal cell, the radial vein projecting backwards to the middle of the wing.

Hab.—Florida.

C. *Oxylabis* Foerster.

CI. *Belyta* Jurine.

CII. *Synacra* Foerster.

CIII. *Pantolyta* Foerster.

CIV. *Zygota* Foerster.

CV. *Aclista* Foerster.

CVI. *Acropiesta* Foerster.

CVII. *Anectata* Foerster.

144 (1). *Anectata hirtifrons*, n. sp.

Female. Length .12 inch. Black, slightly pubescent. Face and cheeks covered with dense white pubescence. Antennæ 14-jointed, and when bent backwards reach to tip of abdomen; scape long, slightly bent or curved, pedicel annular, first five funicle joints longer than wide, following joints moniliform. Antennæ and legs rufous. Mesothorax with two grooves. Scutellum convex with a deep transverse groove at base. Abdominal petiole long, cylindrical, same thickness throughout. Wings hyaline, veins brown; the closed marginal cell is longer than the marginal vein.

Hab.—Canada. Described from one specimen kindly given me by Mr. W. H. Harrington, of Ottawa.

CVIII. *Pantoclis* Foerster.

CIX. *Macrorhynosis* Foerster.

CX. *Xenotoma* Foerster.

145 (1). *Xenotoma mellipes* Say (Cinctus). LeConte's Ed. Say's Works, p. 726.

Hab.—Indiana.

CXI. *Leptorhaptus* Foerster.

CXII. *Cinctus* Jurine.

146 (1). *Cinctus nasutus* Prov. Add. a la Faune Hym., p. 178.

Hab.—Canada.

CXIII. *Diphora* Foerster.

CXIV. *Zelotypa* Foerster.

CXV. *Miota* Foerster.

A NEW VARIETY OF PAPILIO AND A NEW CATOCALA FROM THE PACIFIC COAST.

BY JAMES BEHRENS.

I have received from Mr. Behrens, of San Francisco, the following descriptions for publication, and with them the specimens to which they refer. The *Papilio* is a very extraordinary aberration, probably owing

its color to a change in the food plant. I learn from Mr. Behrens that four specimens were obtained, all agreeing with each other. The *Catocala* is, I have no doubt, the form referred to by me (Pacific Coast Lepid., No. 14, Proc. Cal. Acad. Sc., 1875) as having been seen by the late Baron Terloo at San Jose, Cal. I think it a good species, and in this view I am sustained by those excellent authorities on *Catocala*, the Rev. G. D. Hulst and Prof. G. H. French.

HY. EDWARDS. (New York.)

PAPILIO RUTULUS, var. *AMMONI*, Behrens.—A very peculiar form, in which the ground color of all the wings is of a deep but rather dull orange color, and the bands and marks of the upper side all rather broader and more distinct than in the normal form. The orange color prevails also on the lower side, though a little mottled with lighter shades. Four specimens, male and female. Nevada. Taken by my friend, Herr v. Ammon, of San Francisco, in whose honor it is named.

CATOCALA ELDA, n. sp., Behrens.—Allied to *C. Relicta*, Walk., and more closely to its variety, *C. Phrynia*, Hy. Edw. It differs from this, however, by the superior wings being of one shade of grizzled gray, the whole surface covered with mottled scales obscuring all the lines except the t. p., which is straighter than in *C. Relicta*, and less deeply toothed. The orbicular is very large and distinct. The inferior wings are very much like those of *C. Relicta*, only the medium band is much narrower than in the Eastern species. On the under side the black band and discal spot are very distinct, black, and not shading into brown, as is usually the case with the common species. It is also smaller, the expanse of wings being only 68 mm., while that of *C. Relicta* averages 78 mm. Three examples. Portland, Oregon. Taken at the light of electric lamp.

CORRESPONDENCE.

Editor Can. Ent.: Allow me to correct two mistakes in my paper on the *Bombycidae*, p. 156 *et seq.* of this volume. For "oval" p. 157, line 3, read "oral." For "North American," p. 159, line 17, read "American," as it is, indeed, evident from the context, that I wished to credit the *Ceratocampinae* to both North and South America. It is, I believe,

absent from the West Indies, and the peculiar distribution of this sub-family has long engaged my attention.

A. R. GROTE.

Bremen, Aug. 15, 1887.

Dear Sir: In reply to Mr. Henshaw's note as to *Carabus auratus*, I quote here Dr. Harris's words: "I have taken one specimen of this fine *Carabus* in Massachusetts and we have several *other* species which are equally predaceous," etc. (p. 72). There is not a word about the probable introduction of the specimen, and no reader could suppose that Dr. Harris thought it introduced. As it stands it is most certainly a "curious" identification, and seeing that Dr. Harris was by no means infallible (as seen in his describing *P. celeus* as *P. carolina* L.) it might be readily doubted. The italics (*other*) are mine, and certainly this word covers the origin of *C. auratus* in North America. In my paper I did not venture, nor intend, to do more than call attention to this remark of Dr. Harris's. If they shall have borne the fruit promised by Mr. Henshaw, my words will have been justified. But when *C. auratus* comes to be mentioned, it will be proper to state that Dr. Harris's reference to this species (House Report, April 1838, p. 72) is such a one that the reader must believe Dr. Harris regarded the European *C. auratus* as a Massachusetts species also.

The House, before whom Dr. Harris laid his Report, could come to no other conclusion from its language than that *Carabus auratus* was found in Massachusetts as well as in France. As to what Dr. Harris had then, or at a later date, affixed to the specimen in his collection, the House could have no knowledge and as little care. Dr. Harris's style is quite clear. It is not necessary to know German to understand his English. Therefore, on the whole, I was warranted in calling his identification as it stands, "curious."

A. R. GROTE.

THE ANNUAL MEETING of the Society will be held on 26th and 27th October, at OTTAWA (*not London, as stated in our last number*). Members are requested to bring with them, or send, papers to be read at the meetings. MSS. and specimens for exhibition or distribution may be sent to the care of Mr. Fletcher, Central Experimental Farm, Ottawa.

Mailed October 21st.

